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THE PURDUE LANDSCAPE REPORT

In This Issue

Plant Disease Symptoms You Could Notice in Your Home Landscape

(John Woodmansee, jwoodman@purdue.edu)

Do your landscape plants have cankers, mosaics, galls, mummies, or witches' brooms? These and other symptoms are often difficult for the average homeowner to understand, let alone visualize. Purdue Extension staff can often assist with diagnosing plant diseases.

Additionally, Purdue Extension specialists Janna Beckerman (retired) and Tom Creswell authored the publication, "Symptoms and Signs for Plant Problem Diagnosis – An Illustrated Glossary." It is designed to help homeowners and professionals understand plant disease symptoms and signs, one of the first steps in correctly diagnosing a disease or abnormality and subsequently formulating a management strategy, if needed. I'll use some verbiage and examples from the publication.

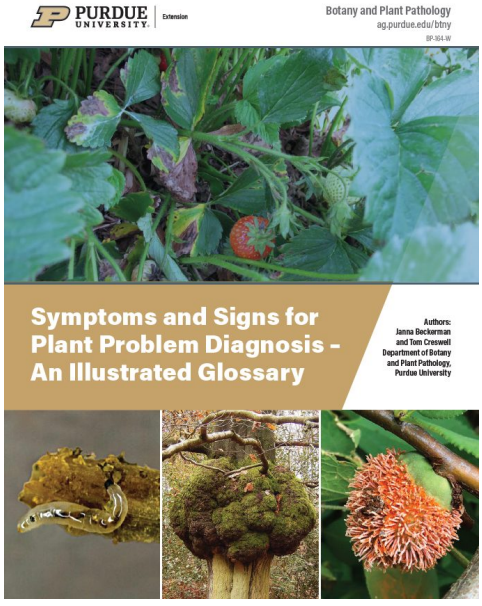

Figure 1. 'Symptoms and Signs for Plant Problem Diagnosis-An Illustrated Glossary' Authored by Dr. Janna Beckerman and Dr. Tom Creswell.

I'll cover a few of the more common symptoms I've encountered when working with local homeowners as an Extension Educator, plus others that you may notice in plants.

There is a difference between symptoms and signs. A symptom is a change in plant growth or appearance that may indicate or describe a plant health problem. However, for any given symptom, there could be multiple causes of that observed change. A sign, on the other hand, is the evidence of the damaging factor—the actual cause of the problem that allows for a conclusive diagnosis of a plant health issue. Examples of common signs include catching a fat green tobacco hornworm chewing on your tomato plants or seeing the fluffy white mycelia of white mold in beans. A parallel in a crime scene might be the presence of the perpetrator's fingerprints, for example.

Chlorosis is the yellowing or loss of color in normally green tissues due to the destruction of chlorophyll. Chlorophyll is an essential component of photosynthesis in plants, and it makes leaves green. Insects, pathogens (causes of plant diseases, such as fungi or bacteria), and abiotic disorders (non-living, non-infectious factors, such as environmental factors or nutrient deficiencies) can cause chlorosis.

Cankers are localized, cracked, or sunken lesions on a branch, stem, or trunk. Growth can girdle infected plant parts, resulting in blight or dieback. Cankers are typically caused by bacterial or fungal pathogens.

Galls are a tumor, swelling, or outgrowth of disorganized plant tissue. They are commonly found on leaves, twigs, or crowns of plants. They can be caused by pathogens, insects, or as a response to injury.

Leaf spots are localized destruction of the chlorophyll by the feeding of pathogens or sucking insects. There are many types of leaf spots, caused by fungi, bacteria, nematodes, viruses, insects or mites, algae, and abiotic disorders.

Mosaics are dark green, light green, and/or yellow areas forming a variegated pattern. They are caused by a virus.

Mummies are dried, shriveled fruit, partly composed of fungal material. Fungi cause mummies.

Necrosis is the term for the death of plant tissue, resulting in the tissue turning black or brown.

Needle cast is a name given to foliar diseases in conifers where plants shed or cast off their needles. Fungal pathogens can cause needlecast diseases, although some insects can also consume needles with similar effects.

A witches' broom is an abnormal, brush-like growth of many weak shoots. It often looks somewhat similar to broom bristles on a plant. Insects, fungi, bacteria, or viruses can cause witches' brooms.

Consult the referenced publication for illustrations and descriptions of a wider array of symptoms and signs. Find it at Purdue Extension's Education Store, https://edustore.purdue.edu/. It has a modest price of $7.50, not including shipping fees. You can also download the publication for free at https://www.extension.purdue.edu/extmedia/BP/BP-164-W.pdf

If you need help in diagnosing your plant problems, you can submit a sample to the Purdue Plant and Pest Diagnostic Laboratory for a modest fee. Information about submitting a sample can be found at their website: https://ag.purdue.edu/department/btny/ppdl/submit-samples/submit-sample.html

Is your Penstemon stem swelling? It's probably a moth!

(Andrew Johnston, john3796@purdue.edu)

Many Hoosier landscapes include flowering plants known as beardtongue or simply by its scientific name, *Penstemon*. This is the largest genus of flowering plants that is endemic to North America, with some 280 species spread throughout the continent – at least 11 of which are native to Indiana. Many of the cultivars planted in gardens are perennial plants with multiple stems and vibrant stems, leaves, and flowers.

Figure 1. Penstemon sample with swollen stem galls.

Several Penstemon plants from a West Lafayette garden were observed in late May to have swollen stems and stunted growth (Fig. 1). I had the chance to examine them after they were submitted to the Plant & Pest Diagnostic Lab and found a surprise when the stems were cut open – caterpillars! (Figs. 2,3)

Figure 2. Penstemon stem cut in half showing large empty chamber with small caterpillar.

Figure 3. Caterpillar of the stem-galling moth, Caloptilia murtfeldtella.

I had not seen this pale 2mm beast before, but knew it was a member of a Gracillariidae, a family of moths that typically attack leaves where they chew "mines" by eating the fleshy inner parts of the leaf and leave the top and bottom epidermis layers as a protective barrier to the outside world. There are over 2000 species of this family around the world, but one unique species is found across North America and attacks Penstemon.

The insect in question is *Caloptilia murtfeldtella* (Busck) – one of many species that lacks a common name. It is very special within this family as it is one of a small handful of species that produces a stem gall. The caterpillar bores its way to the center of the stalk where it is able to co-opt the plant into producing a large, elongated piece of stem. The caterpillar feeds inside this pocket of freshly grown food before it is time to pupate into an adult moth, mate, and complete its life cycle. The species occurs across the northern United States and Canada from coast to coast and little is known about its host preferences or how severe of a problem it presents for Penstemon plants throughout the range. In the sample we received, every internode of the stems was at

least slightly swollen, and each had a single caterpillar living inside. Adults seem to be active most of the summer, perhaps with two generations, and are commonly seen in May-June and September.

Figure 4. Adult of the stem-galling moth, Caloptilia murtfeldtella. Photo credit: edporopat, iNaturalist https://www.inaturalist.org/photos/427862443

Control options are limited for this insect and lack any specific testing for this species, though systemic pesticides labeled for leaf miners and caterpillars should do the trick. Active ingredients such as Acetamiprid or Spinosad could be appropriate, but remember that systemic insecticides could negatively impact beneficial insects, including pollinator,s which would visit Penstemon.

Have you seen these symptoms in your own Penstemon plants? Submit samples to the PPDL if you suspect you are experiencing this too. And if you see a swollen stem, take a moment to admire the ingenuity of a moth caterpillar that has changed from the habits of its relatives and found a unique and prosperous way to make a living.

Hot and humid weather persists, but a cool down is expected during the first week of August

(Austin Pearson, pearsona@purdue.edu)

The heat and humidity have returned to the state, as heat indices soared above 100°F on Wednesday and Thursday (July 23-24) this week. The National Weather Service issued heat advisories that spanned from northeast Texas to northeast Ohio on July 24. Over the last 7-day period (July 16-22), average temperatures ranged from near normal in northern Indiana to 2-4°F above normal in southern Indiana (Figure 1). Maximum temperatures were near normal in the south to 2-4°F below normal in the northern half of the state (Figure 2). Minimum temperature departures were more notable, as temperatures ranged from 1 to 6°F above normal statewide (Figure 3).

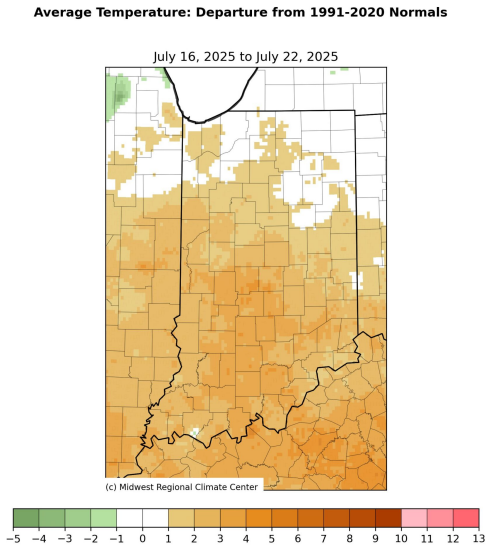

Figure 1. July 16-22 Mean Temperature departure from the 1991-2020 normal.

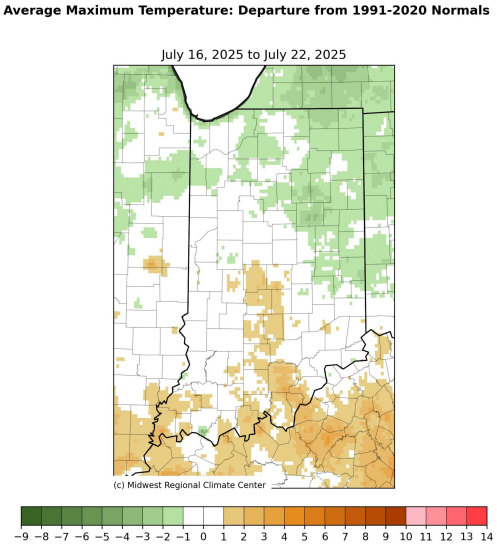

Figure 2. July 16-22 Max Temperature departure from the 1991-2020 normal.

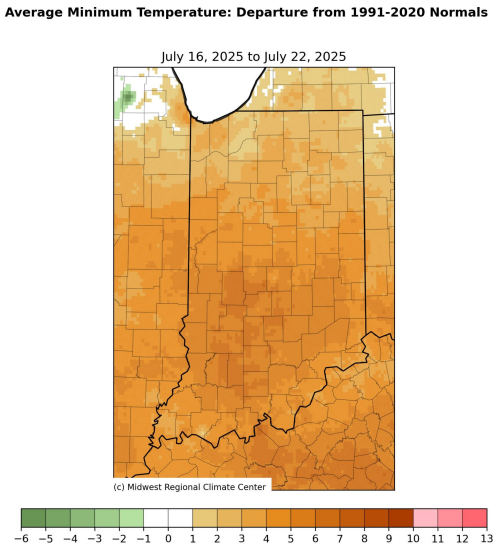

Figure 3. July 16-22 Min Temperature departure from the 1991-2020 normal.

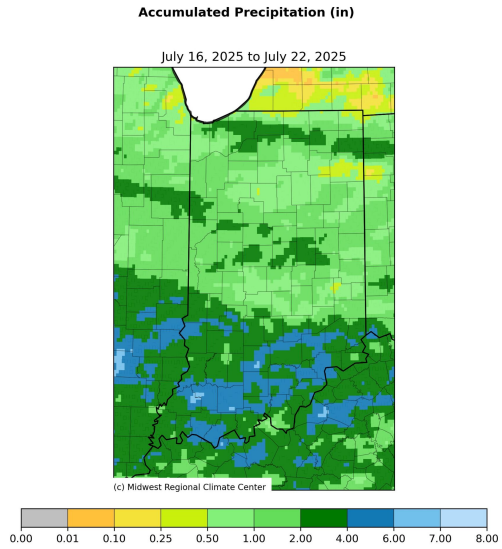

Figure 4. July 16-22 accumulated precipitation.

Notice anything different with these maps? The Midwestern Regional Climate Center (MRCC) released new gridded maps this week, sourced from PRISM datasets and **the** NCEI 1991-2020 Normals dataset. Regional maps are now accessible on the MRCC's Midwest Climate Watch and Ag Climate Dashboard, while Indiana maps can be obtained from the Indiana State Climate Office. The high-resolution grids enable us to see more detailed map features, helping us identify hotspots for temperatures and precipitation. Speaking of precipitation…

Southern Indiana received the highest rainfall totals from July 16 to 22, with areas measuring between 6 and 9 inches (Figure 4). Mitchell 2.1 N, located in Lawrence County, recorded 9.12 inches during these 7 days. Francisco 0.1 SE, in Gibson County, reported 6.57 inches over the same span. During the previous 30-day period (June 23-July 22), northern Indiana experienced areas with less than 50 percent of normal rainfall, and in some cases, less than 25 percent of normal rainfall in parts of Allen County (Figure 5). Most of southern Indiana has received between 150-300 percent of normal rainfall over the past 30 days, with a significant portion falling between July 16 and 22.

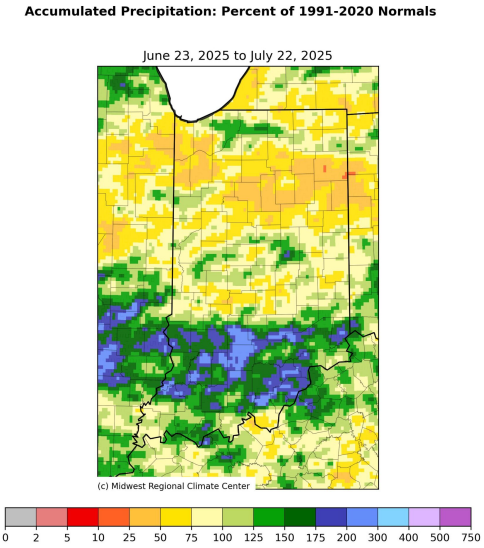

Figure 5. Accumulated precipitation from June 23 to July 22 shown as a percentage of the 1991-2020 normals.

How has the July 22 US Drought Monitor responded to recent rainfall totals? Southern Indiana is now free of Abnormally Dry (D0) conditions, but Moderate Drought (D1) has expanded into several counties in northern Indiana (Figure 6). Severe Drought (D2) has been added in far western Lake County this week. Not all areas in northern Indiana saw worsening conditions. Heavy rain improved conditions in St. Joseph, Elkhart, Noble, and DeKalb counties, which were previously under D0 conditions. Overall, about 15 percent of the state is experiencing drought conditions (D1 or D2), while nearly 16 percent is in D0 status.

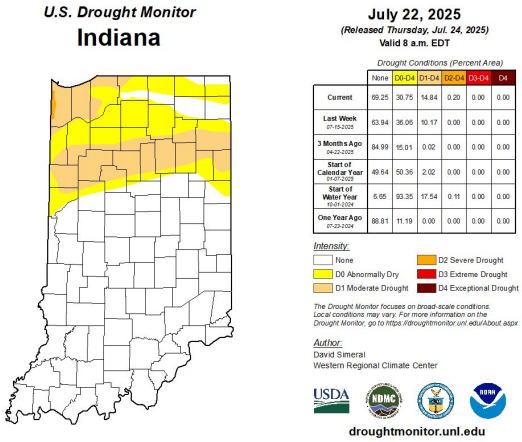

Figure 6. July 22, 2025, US Drought Monitor map.

Regarding Modified Growing Degree Days (MGDD), these maps have also been updated to provide a clearer view of MGDD accumulations across the Midwest (Figure 7). Almost all of Indiana has experienced above-normal MGDD accumulations since May 1. Central Indiana, west and south of Indianapolis, is running 150-180 units above normal for the growing season as of July 22.

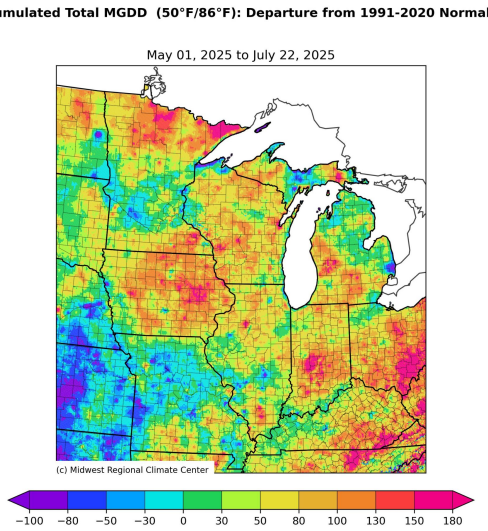

Figure 7. MGDD (base 50, ceiling 86F) accumulation for May 1 – July 22 represented as the departure from the 1991-2020 climatological normal.

So, what's ahead in the coming weeks? The Climate Prediction Center indicates that near-to-above-normal temperatures and typical precipitation are likely to persist through the end of the month (Figure 8). However, a cooldown is expected in the first week of August, with below-normal temperatures and near-normal to below-normal precipitation expected (Figure 9).

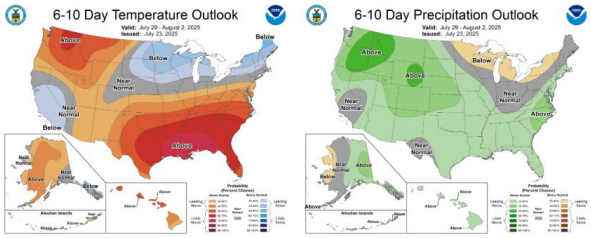

Figure 8. CPC 6-10 Day Temperature and Precipitation Outlooks, valid July 29-August 2, 2025.

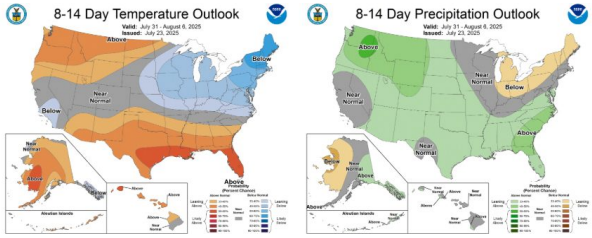

Figure 9. CPC 8-14 Day Temperature and Precipitation Outlooks, valid July 31-August 6, 2025.

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